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7 August 1973

National Aeronautics and Space Administration
Lyndon B. Johnson Space Center
Houston, Texas 77058

Attention: Dr. Timothy T. White, Code TF6
Principal Investigations Management Office

Subject: First Quarterly Progress Report
Experimental Evaluation of Atmospheric Effects
on Radiometric Measurement Using the EREP of
SKYLAB (EPN No. 439)
Contract No. NAS 9-13343

Gentlemen:

This is the first Quarterly Progress Report prepared and submitted by
Environmental Research & Technology, Inc. (ERT) under Contract NAS 9-13343.
The reporting period is for the three months between 7 May and 7 August 1973.
The purpose of the study is to evaluate the effects of the atmosphere on
radiometric measurements using the EREP sensors of SKYLAB.

1. Progress During the Reporting Period

The contract was received and signed on 7 May 1973. Even before the
contract was in effect the Principal Investigator, David Chang, was engaged
in Pre-Mission Preparation for SL-2. These preparations primarily dealt with
interfacing with the Aircraft Facility personnel on the acquisition of optimum
"ground-truth" data. During this period, a procedure was established at the
facilities of ERT in Lexington, Massachusetts to monitor, on a day-to-day basis,
the weather changes, especially precipitation, over the target sites. It is
felt that the time history of precipitation over the selected areas has a sig-
nificant effect on the surface reflectivities and also emissivities. The pri-
mary data used in the site monitoring were the weather reports and surface
weather maps received at ERT over teletype circuits as part of the daily
weather data received by the company.

During SL-2, the Principal Investigator on one occasion interfaced with
PIMO on the acquisition of data over the Salton Sea region. Otherwise, work
continued on the site monitoring as described above. In addition, preparation
for data analysis was initiated. This included the refinement of computation
techniques and the familiarization of the formats of the various digital data
to be received from the EREP and aircraft.

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E73-12857) EXPERIMENTAL EVALUATION OF
ATMOSPHERIC EFFECTS ON RADIOMETRIC
MEASUREMENT USING THE EREP OF SKYLAB
Quarterly (Environmental Research and
Technology, Inc.) 2 p HC \$3.00 CSCI 03B

Subsequent to SL-2, a Milestone Plan was prepared and submitted. During this period, a number of quick-look data sets were received. To date, these data may be summarized as follows:

Data from aircraft overflight of Project/Test Site S439/027 including the following positive B&W film:

| <u>Sensor</u> | <u>Frames</u> |
|---------------|---------------|
| HB4 | 001 - 112 |
| MSS | 001 - 014 |

In addition, the film from the sighting telescope for the S-192 from the EREP was received.

Quick-look of the data has focused on the selection of the aircraft ground-truth data to be developed from the 24 Channel Multispectral Scanner. After examining the positive transparencies relative to the geographical location of the ground track of the EREP pass, the decision has been made to request the digital taped data from the 24 channels for frames 006 and 007. These frames include data which have approximately one-half of each scan made over water and the other half over relatively uniform land surface. The data will thus provide the necessary two point calibration of a low reflectance and a high reflectance target.

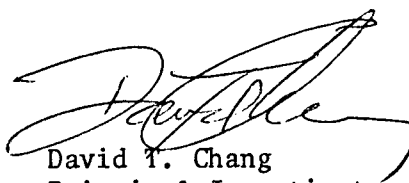
2. Future Plans

Preliminary analysis of EREP data from SL-2 or aircraft data will be continued as data becomes available. Computer programs to process the digital tape data from the aircraft sensors from EREP will be prepared. Detailed analysis of the digital data will be initiated as they become available.

3. Financial Report

In accordance with Appendix A of the Work Statement of the subject contract, the Financial Management Report is being submitted as a separate document.

Very truly yours,



David T. Chang
Principal Investigator

DTC:jc